

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-11. (Canceled)

12. (Previously Presented) The hydrostatic bearing of claim 44, wherein said bearing carriage further comprises:

a fluid inlet port constructed and arranged to receive hydraulic fluid hoses, said fluid input port being in fluid communication with said one or more bearing pads; and

a fluid outlet port constructed and arranged to receive hydraulic fluid hoses, said fluid outlet port being in fluid communication with said plurality of drain grooves.

13-16. (Canceled)

17. (Previously Presented) The hydrostatic bearing of claim 44, further comprising one or more fastening holes provided on upper surfaces of said bearing carriage, said fastening holes being constructed and arranged to allow a machine component to be removably mounted on said bearing carriage.

18. (Previously Presented) A machine tool mounted on one or more hydrostatic bearings according to claim 44.

19-41. (Canceled)

42. (Currently Amended) The hydrostatic bearing carriage of claim 44, wherein the side portions of said sealing structure have a substantially upwardly-facing u-shaped cross-section.

43. (Canceled)

44. (Currently Amended) A hydrostatic bearing comprising:

a bearing rail; and

a bearing carriage constructed and arranged to be mounted for hydrostatically supported movement on said bearing rail, said bearing carriage including

one or more bearing pads provided on surfaces that oppose said bearing rail, said one or more bearing pads being constructed and arranged to be in fluid communication with a pressurized fluid source;

a sealing structure having contiguous side and end portions;

a fluid return system including a plurality of drain grooves in fluid communication with said one or more bearing pads, at least one of said plurality of drain grooves being positioned between the one or more bearing pads and the sealing structure, the plurality of drain grooves surrounding the one or more bearing pads.

45. (Previously Presented) The hydrostatic bearing of claim 44, wherein said bearing carriage further comprises one or more reservoirs in fluid communication with said plurality of drain grooves.

46. (Previously Presented) The hydrostatic bearing of claim 45, wherein said one or more reservoirs comprise a plurality of reservoirs that are provided in end portions of said bearing carriage, ones of said plurality of reservoirs including fluid inlet and outlet ports in communication with a hydraulic power unit.

47. (Original) The hydrostatic bearing of claim 44, wherein said bearing rail has a rectilinear shape.

48. (Original) The hydrostatic bearing of claim 47, wherein said bearing rail has a T-shaped cross-sectional area.

49. (Original) The hydrostatic bearing of claim 44, wherein said one or more bearing pads are self-compensating bearing pads.

50-58. (Canceled)

59. (Previously Presented) The hydrostatic bearing of claim 44, wherein said bearing carriage further comprises a central portion and removably mounted keeper portions that engage portions of said bearing rail.

60. (Previously Presented) The hydrostatic bearing of claim 59, wherein said side portions of said sealing structure are disposed within seal grooves in said keeper portions.

61. (Cancelled)

62. (Previously Presented) The hydrostatic bearing of claim 44, wherein at least one of the plurality of drain grooves extends along the length of said bearing carriage.

63. (Previously Presented) The hydrostatic bearing of claim 44, wherein the end portions of said sealing structure include double-lipped seals.

64. (Previously Presented) The hydrostatic bearing of claim 44, wherein one of the one or more bearing pads includes a pocket groove enclosing therein a first planar area constructed and arranged to resist a flow of pressurized fluid when said one of the one or more bearing pads is in a load supporting position relative to said bearing rail; and wherein the plurality of drain grooves completely surrounds the pocket groove.

65. (Previously Presented) The hydrostatic bearing of claim 64, wherein the one of the one or more bearing pads includes a second planar area constructed and arranged to resist a flow of pressurized fluid when said one of the one or more bearing pads is in a load supporting position relative to said bearing rail, wherein said second planar area contiguously surrounds said pocket groove, wherein the plurality of drain grooves completely surrounds the second planar area.

66-68. (Cancelled)

69. (New) The hydrostatic bearing of claim 65, wherein the one of the one or more bearing pads includes a compensating groove, and wherein the second planar area does not include a groove between the compensating groove and the pocket groove.

70. (New) The hydrostatic bearing of claim 44, wherein:

said one or more bearing pads comprise a plurality of self-compensating bearing pads; and

each of the plurality of self-compensating bearing pads comprises:

a pocket groove fluidly connected to a compensating groove of another of the plurality of self-compensating bearing pads,

a compensating groove fluidly connected to a pocket groove of another of the plurality of self-compensating bearing pads,

a supply groove proximate to said compensating groove, the supply groove being constructed and arranged to be in fluid communication with the pressurized fluid source, and

a planar resistive land separating said supply groove and said compensating groove, the planar resistive land being constructed and arranged to resist the flow of pressurized fluid from said supply groove to said compensating groove, the planar resistive land surrounding the supply groove,

wherein a portion of the planar resistive land is interposed between the compensating groove and the pocket groove, the portion of the planar resistive land being constructed and arranged to resist the flow of the pressurized fluid from said compensating groove to said pocket groove when said bearing pad is mounted for hydrostatically supported movement on said bearing rail, and

wherein the planar resistive land does not include a drain groove between the compensating groove and the pocket groove.

71. (New) The hydrostatic bearing of claim 44, wherein the sealing structure surrounds the plurality of drain grooves.

72. (New) The hydrostatic bearing of claim 44, wherein:

said end portions of said sealing structure are constructed and arranged to seal ends of said bearing carriage;

said side portions of said sealing structure are constructed and arranged to extend along at least a portion of sides of said bearing carriage to seal said sides;

said end portions of said sealing structure include a double-lipped seal, a first lip of the double-lipped seal engaging the bearing rail and a second lip of said double-lipped seal preventing debris from entering said bearing carriage; and

the fluid return system further comprises reservoir structures defined by portions of said bearing carriage and sealed by said sealing structure, wherein the plurality of drain grooves are constructed and arranged to conduct pressurized fluid from said bearing pads to said reservoir structures.

73. (New) A hydrostatic bearing comprising:

a bearing rail; and

a bearing carriage constructed and arranged to be mounted for hydrostatically supported movement on said bearing rail, said bearing carriage comprising a plurality of self-compensating bearing pads, each of the plurality of self-compensating bearing pads comprising

a pocket groove fluidly connected to a compensating groove of another of the plurality of self-compensating bearing pads,

a compensating groove fluidly connected to a pocket groove of another of the plurality of self-compensating bearing pads,

a supply groove proximate to said compensating groove, the supply groove being constructed and arranged to be in fluid communication with a pressurized fluid source, and

a planar resistive land separating said supply groove and said compensating groove, the planar resistive land being constructed and arranged to resist the flow of pressurized fluid from said supply groove to said compensating groove, the planar resistive land surrounding the supply groove,

wherein a portion of the planar resistive land is interposed between the compensating groove and the pocket groove, the portion of the planar resistive land being constructed and arranged to resist the flow of the pressurized fluid from said compensating groove to said pocket groove when said bearing pad is mounted for hydrostatically supported movement on said bearing rail, and

wherein the planar resistive land does not include a drain groove between the compensating groove and the pocket groove.

74. (New) The hydrostatic bearing of claim 73, wherein the planar resistive land of at least one of the plurality of self-compensating bearing pads surrounds the compensating groove of said at least one of the plurality of self-compensating bearing pads.

75. (New) The hydrostatic bearing of claim 73, wherein the planar resistive land of at least one of the plurality of self-compensating bearing pads surrounds the pocket groove of said at least one of the plurality of self-compensating bearing pads.

76. (New) The hydrostatic bearing of claim 75, wherein, in the at least one of the plurality of self-compensating bearing pads:

the planar resistive land is interposed between the supply groove and the pocket groove, the planar resistive land being constructed and arranged to resist the flow of the pressurized fluid from said supply groove to said pocket groove when said bearing pad is mounted for hydrostatically supported movement on said bearing rail, and

the planar resistive land does not include a drain groove between the supply groove and the pocket groove.

77. (New) A hydrostatic bearing comprising:  
a bearing rail; and  
a bearing carriage constructed and arranged to be mounted for hydrostatically supported movement on said bearing rail, said bearing carriage comprising

one or more bearing pads constructed and arranged to receive fluid from a pressurized fluid source and to cause that fluid to flow selectively over a collection of bearing grooves and resistive lands so as to create a supporting fluid layer between said bearing carriage and the bearing rail, and

a fluid recovery system constructed and arranged to discourage fluid from flowing out of the space between said bearing carriage and the bearing rail and to route the fluid back towards the pressurized fluid source, said fluid recovery system comprising

a sealing structure having end and side portions, said end portions being constructed and arranged to seal ends of said bearing carriage and said side portions being constructed and arranged to extend along at least a portion of sides of said bearing carriage to seal said sides,

reservoir structures defined by portions of said bearing carriage and sealed by said sealing structure, and

drain grooves constructed and arranged to conduct pressurized fluid from said bearing pads to said reservoir structures.

78. (New) The hydrostatic bearing of claim 77, wherein said end portions including a double-lipped seal, a first lip of the double-lipped seal engaging the bearing rail and a second lip of said double-lipped seal discouraging debris from entering said bearing carriage.